California Monthly Climate Summary
July 2011

Weather Highlights

July 2011 was a cooler than average month for California with near normal precipitation. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 71.5°F which is 1.3°F lower than the long-term average of 72.8°F. This was the first cooler than average July in a decade. A copy of the California Climate Tracker Temperature plot for average temperature is copied at the end of this document. With a statewide average of 0.19 inches, precipitation in July was 101% of average.

July's weather started with a rapid warm-up following the strong storm that blew through the State at the end of June. Temperatures topped 100 degrees Fahrenheit in the Central Valley and desert regions. Coastal regions stayed cool with highs in the 80s. A weak system passing over the state in week two caused temperatures to moderate while monsoonal moisture set off thunderstorms in the desert southeast. Monsoonal moisture continued to flow over the State in the third week with thunderstorms developing over the Sierra and Southeast regions. The fourth week saw a frontal system brush the northern part of the state with 0.1 to 0.2 inches of precipitation falling in places. July closed out with continued onshore flow on the coasts and warmer temperatures inland.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 79 temperature records tied or broken and 12 precipitation records tied or broken for the month. Of the 79 temperature records set, 28 were for new low maximum temperatures and 31 were for new high minimum temperatures. Records were set over 20 days of the month. Most of the precipitation records were trace amounts tying similar traces from past years. The exceptions include Bishop, CA which recorded 0.08 inches of rain on July 5th which topped the 0.06 inches that fell in 1974. On July 18th, Crescent City recorded 0.19 inches of rain topping the old record of 0.09 inches also set in 1974. For temperature, Needles, CA set a low maximum temperature record on July 4th with a reading of 99°F. The previous low maximum temperature was 101°F set in 1961. Oakland set a new high maximum temperature record on July 5th with a reading of 84°F beating the old record of 80°F set in 1953.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 23 stations recorded a minimum temperature below freezing in July while 78 stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in July ranged from nonexistent to well above normal across the State. For the CDEC precipitation gages for July 2011, the largest amount of precipitation recorded was at Florence Lake in the San Joaquin River Region with 3.41 inches. This is 449% of the average precipitation for this station for July. At the other end of the spectrum, 65 stations recorded no precipitation for the month. For the CIMIS network, Big Bear Lake in San Bernardino County topped the precipitation charts with 1.79 inches for the month and 73 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network.

The 8-Station Index for northern California precipitation recorded 0.01 inches in July with 1 day showing precipitation. On average, 0.2 inches of precipitation is recorded for the 8-Station index in July. Statewide, the average precipitation for July was 92% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

July 2011 continues California's third year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns in participating states. A map from July 31, 2011 is shown at the end of the document. As of the end of July 2011, California has 789 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers at the end of July is Sonoma with 88 volunteers. For the month of July 8,241 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in July was in San Bernardino County with 1.32 inches recorded on 7/31/11. One hail report was recorded in Inyo County. The largest reported hail stones were pea sized. Two sites in the Sierra Nevada recorded snow depth in the month of July. Both sites melted out during the month. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

July is the final month of the April-July snowmelt runoff period. The epic snowpack of 2011 produced above average runoff in all four months. The end-of-July Water Supply Index forecast for WY 2011 is wet for the Sacramento Basin and wet for the San Joaquin Basin. Water year 2010 resulted in a below normal category for the Sacramento Basin and above normal category for the San Joaquin Basin for the Water Supply Index. Water supply information for California can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

The maps for California for June 28, 2011 and August 2, 2011 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the August 2nd depiction, California is depicted as drought free except for portions of the desert regions which are categorized as abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for August through October from NOAA depicts California continuing to be drought free. This forecast is based primarily on climatology and forecast models. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html. The California Nevada River Forecast Center produces some drought monitoring tools for California. These tools look at the frequency associated with precipitation deficits for the Northern California Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. These tools can be found at http://www.cnrfc.noaa.gov/climate.php. For July, the Eight Station Index is in drought free conditions for a 12-month and 24 month period. The Five Station Index is also drought free for both periods. All reservoirs have above average storage for this time of year.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) has transitioned to ENSO neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been mostly negative with values of -0.2°C in the Niño 3.4 at the end of July. The May through July 3-month running mean of the Ocean Niño Index (ONI) is 0.0. This is the second consecutive ENSO neutral reading for the index. Five consecutive ONI values need to be below the threshold o f-0.5 for conditions to be classified as a La Niña event and five consecutive values above the 0.5 threshold need to be observed for classification as an El Niño event. Most forecast models have the tropical sea surface temperatures continuing in ENSO neutral conditions, but split on above or below mean conditions by the end of 2011. More information can be found at the Climate Prediction Center's web site: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ Updates are posted weekly. The latest three month outlook (August through October) from NOAA indicates increased chances of below normal temperatures for the coastal parts of the state and equal chances of above normal or below normal temperature for the rest of the state. For precipitation, equal chances of above or below normal conditions are forecast for the entire state. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

July 2011 saw crops develop, harvests continue and pest management step up. The State's winter wheat crop harvest was completed in July. Cotton and rice crop development continued with rice fields reporting good to excellent conditions. Corn silage harvest continued while alfalfa fields went through a second or fourth cutting depending on location in the State. Grape vineyards continued to develop with the warm weather. Almond hull split continued across the State and harvest preparations were being made. Blueberry, strawberry, and blackberry harvest was in full swing for the month as were citrus crops on the South Coast. Plum, nectarine, and peach harvests continued as well. Harvests of carrots, watermelon, cantaloupe, and bell peppers began in Kern County while honeydew melon were picked and packed in Tulare County. Summer vegetable harvest continued with Fresno County reporting good conditions. Onion harvest wound down in San Joaquin County. Non-irrigated pasture ranged from excellent to poor condition as the summer drying continues. Milk herds were less stressed by the cooler than normal temperatures. Lygus, aphids, spider mites, armyworms, alfalfa caterpillars, coddling moth and flea beetle were found in various parts of the State and treatments applied. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 122°F (Cahuilla, Colorado River Desert)
Low Temperature – 8°F (Casa Vieja Meadows, Tulare)
High Precipitation – 3.41 inches (Florence Lake, San Joaquin River Basin)
Low Precipitation – 0.0 inches (65 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 108.6 ^{0}F (Salton Sea East, Imperial County)
Low Average Minimum Temperature – 42.8 ^{0}F (Alturas, Modoc County)
High Precipitation – 1.79 inches (Big Bear Lake, San Bernardino County)*
Low Precipitation – 0 inches (73 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Jul	Oct-Jul	Stations	Jul	Oct-Jul	Jul	Oct-Jul
North Coast	0.27	5	5	5	15	8	8	143.4%	123%
SF Bay	0.03	3	3	2	6	4	3	0%	140%
Central Coast	0.06	5	5	4	10	8	5	1.7%	147%
South Coast	0.06	5	5	5	14	10	7	89.0%	132%
Sacramento River	0.26	10	8	8	42	20	18	42.6%	133%
San Joaquin River	0.12	7	7	7	26	18	18	21.4%	158%
Tulare Lake	0.07	5	5	5	27	23	24	303.6%	154%
North Lahontan	0.04	6	4	4	13	5	5	60.0%	166%
South Lahontan	0.06	5	5	4	14	9	8	79.6%	180%
Colorado River	0.03	2	2	2	6	6	5	192.3%	126%
Statewide Weighted Average	1	53	49	46	173	111	101	92.0%	140%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	23	43.7	65.6	92.8
SF Bay	8	47.5	67.3	93.0
Central Coast	11	45.4	68.6	95.6
South Coast	51	49.4	72.4	98.0
Sacramento	81	46.5	69.3	93.7
San Joaquin	45	44.2	65.9	89.0
Tulare Lake	18	38.4	61.9	84.9
North Lahontan	23	37.7	58.4	79.7
South Lahontan	15	43.7	67.1	90.3
Colorado River Desert	8	65.0	90.2	113.5
Statewide Weighted Average	283	45.1	67.5	92.5

U.S. Drought Monitor

June 28, 2011
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	87.71	12.29	0.00	0.00	0.00	0.00
Last Week (06/21/2011 map)	99.99	0.01	0.00	0.00	0.00	0.00
3 Months Ago (03/29/2011 map)	99.94	0.06	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	85.44	14.56	8.08	0.24	0.00	0.00
One Year Ago (06/22/2010 map)	87.97	12.03	8.08	0.24	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, June 30, 2011
Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

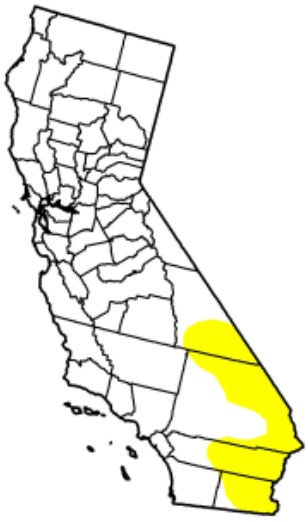
U.S. Drought Monitor

August 2, 2011
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	85.34	14.66	0.00	0.00	0.00	0.00
Last Week (07/26/2011 map)	85.34	14.66	0.00	0.00	0.00	0.00
3 Months Ago (05/03/2011 map)	99.99	0.01	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	85.44	14.56	8.08	0.24	0.00	0.00
One Year Ago (07/27/2010 map)	87.46	12.54	8.08	0.24	0.00	0.00



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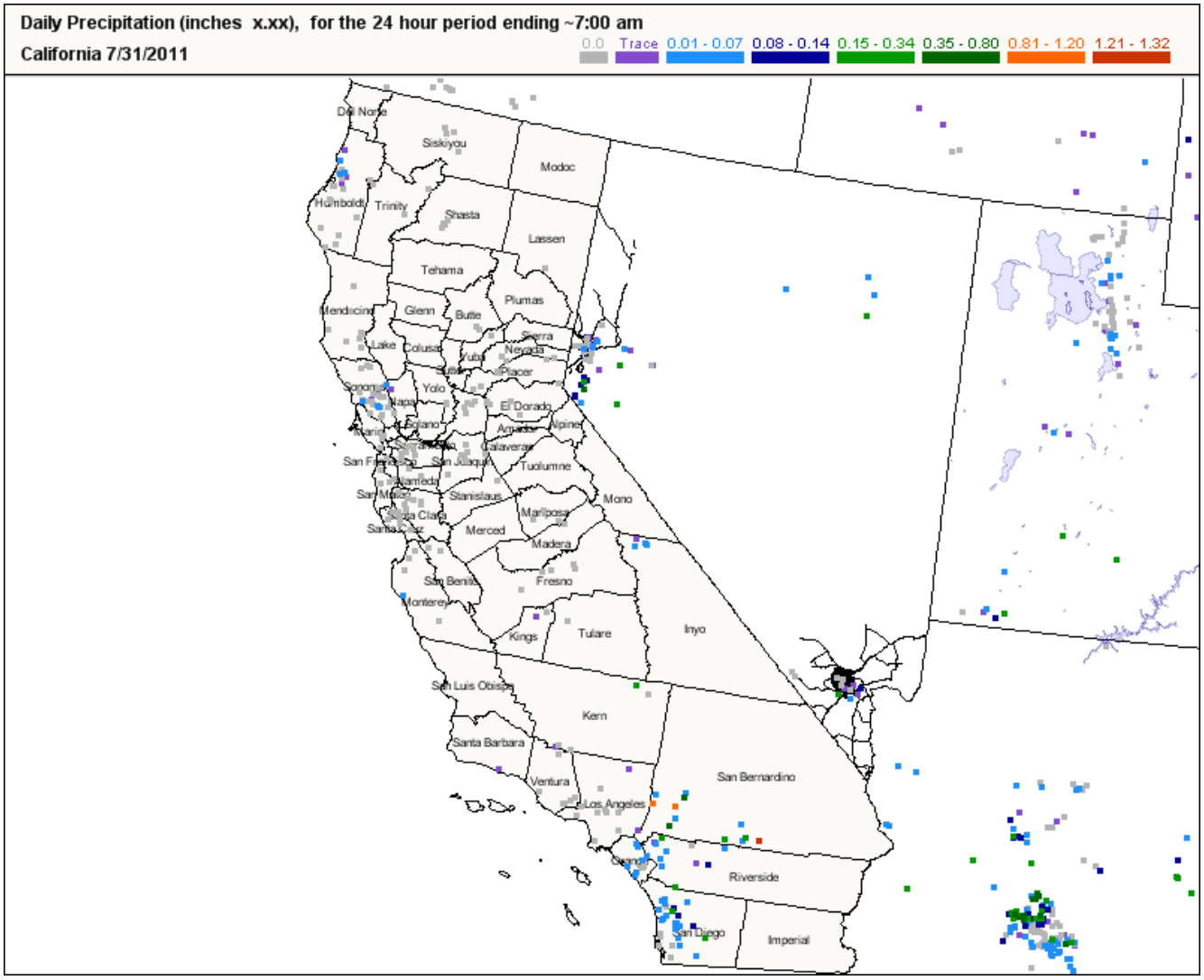
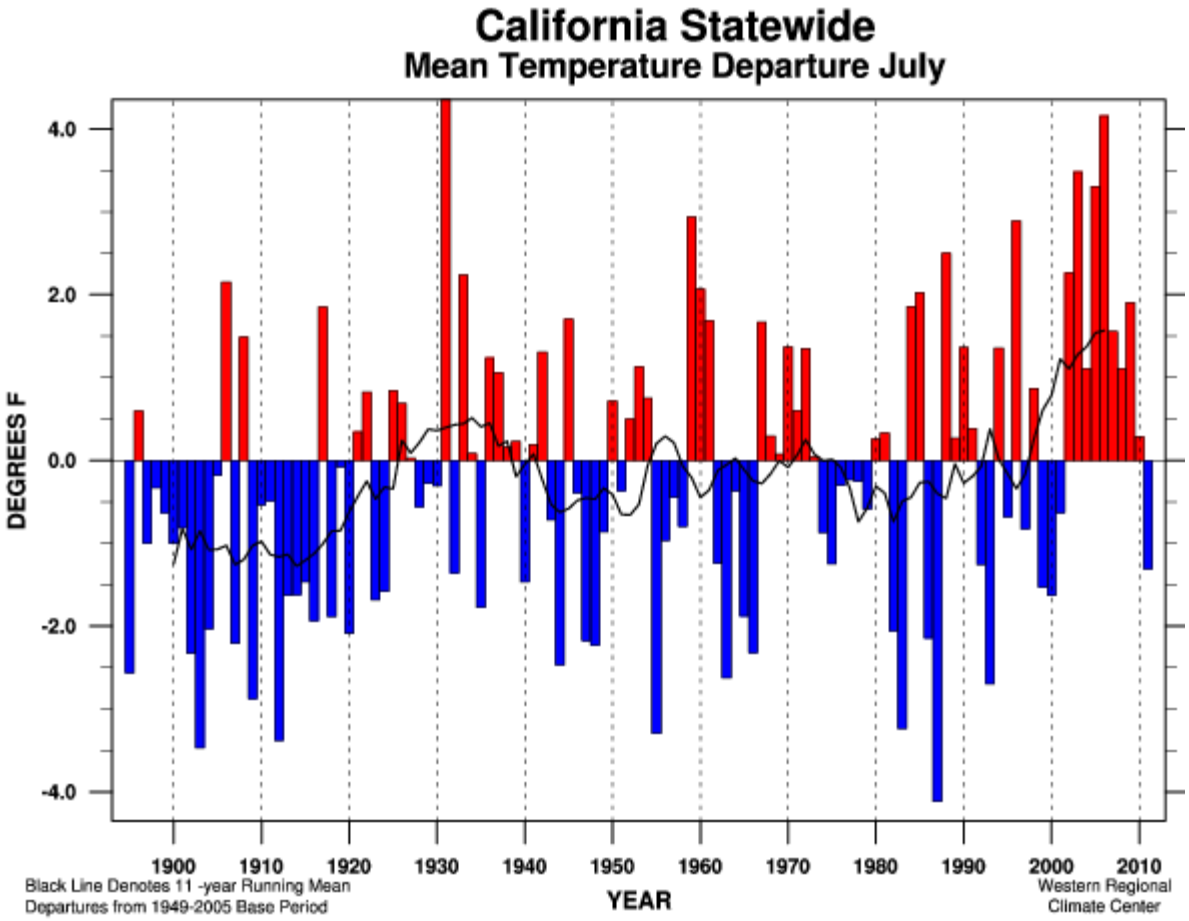
http://drought.unl.edu/dm

Released Thursday, August 4, 2011
Brad Rippey, U.S. Department of Agriculture


Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
California 7/31/2011
0.0 Trace 0.01 - 0.07 0.08 - 0.14 0.15 - 0.34 0.35 - 0.80 0.81 - 1.20 1.21 - 1.32
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Mendocino
Glenn
Butte
Sierra
Lake
Colusa
Nevada
Yuba
Placer
Sonoma
Yolo
Napa
El Dorado
Solano
Alpine
Marin
Amador
Calaveras
San Francisco
San Joaquin
Tuolumne
Alameda
San Mateo
Stanislaus
Mono
Santa Clara
Mariposa
Santa Cruz
Merced
Madera
San Benito
Fresno
Monterey
Kings
Tulare
Inyo
San Luis Obispo
Kern
Santa Barbara
San Bernardino
Ventura
Los Angeles
Orange
Riverside
San Diego
Imperial



Linear Trend 1895-present		+ 1.40 ± 0.89 °F/100yr	
Linear Trend 1949-present		+ 2.01 ± 2.40 °F/100yr	
Linear Trend 1975-present		+ 6.54 ± 5.69 °F/100yr	
Warmest Year		77.1 °F (+ 4.4 °F) in 1931	MEAN 72.8 °F
Coldest Year		68.7 °F (- 4.1 °F) in 1987	STDEV 1.80 °F
July	2011	71.5 °F (- 1.3 °F)	RANK 33 of 117